



# State of Good Repair Assessment Dallas Area Rapid Transit

Mike Hubbell  
Vice President, Maintenance  
Dallas Area Rapid Transit  
FTA Roundtable – Chicago IL  
July 23, 2010



**1,714 vehicles**



**232 track miles ROW**



**63.5M sf facilities**



**84 miles HOV lanes**



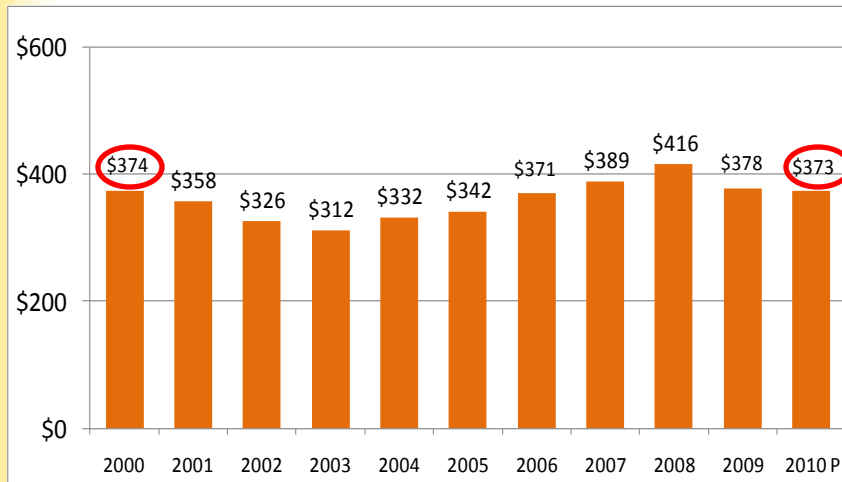
# Policy Guidance

## Board Financial Planning Parameters

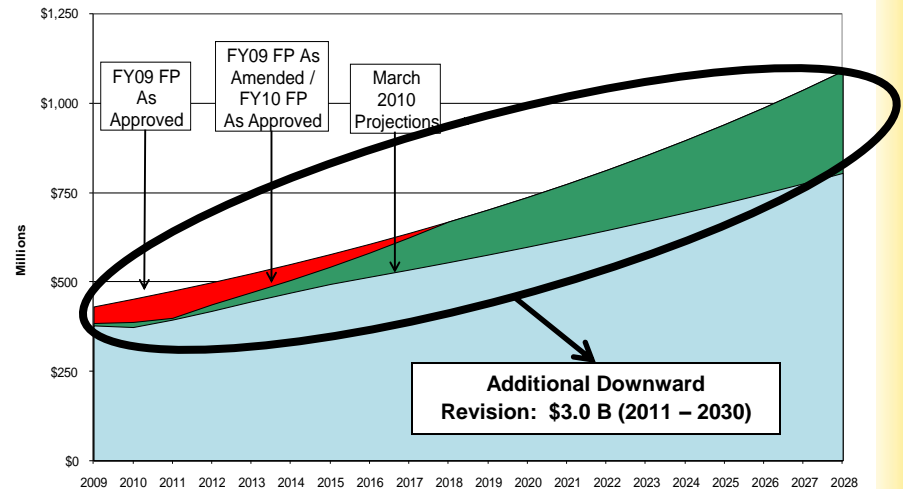
- 20yr Financial Plan – Operating/Expansion/Asset Replacement (Revenues & Expenses)
- Reserve funding for asset maintenance & replacement
- Reserve levels based on asset condition assessment
- Asset condition assessment done every 5 years
- Operating cost escalation capped at 90% of inflation – excluding new services & fuels
- Limits administrative cost ratio increases
- Future capital programs escalate at no less than CPI



# Lost Decade (2000 – 2010)



- 10 years of flat sales tax receipts and lower long-term growth projections...



- ...result in:
  - Sales tax revenues down \$3.0 B
  - Total sources down \$8.7 B
  - Capital spending down \$6.4 B
  - Operating spending down \$0.6 B
  - Debt service costs down \$1.6 B

# Decade of Accomplishments

- Despite decade of zero sales taxes growth, DART has:
  - More than doubled Light Rail System /20 miles to 45 miles
    - Set up to double again in the next few years
  - More than tripled the length of commuter rail service
  - Quadrupled the number of HOV lane miles
  - Provided nearly 700,000,000 fixed route and over 1,100,000,000 total system trips

# Asset Condition Assessment

- Goals
  - Obtain high level assessment of asset inventory
  - Results comparative to previous assessment
  - Ensure rate of physical degradation is consistent with plan
  - Validate maintenance & financial plans aligned with results
  - Adjust maintenance & financial plan where necessary

# Asset Condition Assessment

- Approach
  - Inspection performed by in-house team of 8
  - Team trained on rating and documentation systems to provide continuity
  - Grouped assets into 8 categories
    - Rolling stock (buses, rail cars, light duty)
    - Operating Facilities
    - Passenger Facilities
    - Rail Wayside Systems (track, electrification, signals)
    - Communications
    - Paratransit
    - Commuter Rail
    - HOV



# Asset Condition Assessment

- Approach
  - Unique categories identified
    - Information Technologies Network
    - Bridges & Tunnels
  - Interviewed asset owners to validate criteria, key issues & asset maintenance status
  - Sampling size ranged from 20% - 100% of assets by type
  - Additional administrative staff to compile data
    - 15 – 3” Binders
    - 512 – Inspection Sheets
    - 3,547 - Photographs



# Asset Condition Assessment

## Sampling Sizes

	Total Assets	Sampled	% of Total
Facilities	1,018	148	15%
Vehicles	1,714	341	20%
HOV & Other	19	19	100%
ROW Systems	4	4	100%

# Asset Condition Assessment

## Rating System

Rating	Description
5	In basically like-new condition, any difference being minor cosmetic damage or deterioration.
4	In typically good working order and requiring only routine maintenance. May have major cosmetic damage or deterioration or may have a minor defect indicative of possible fleet-wide issue.
3	Has non-critical defect needing attention or the asset is nearing the end of life requiring overhaul or replacement.
2	Has critical or safety related defect. Not suited for revenue service before repair.
1	Non-functional requiring major repair, structural repair, or replacement.

# Examples

Clearly #5



Clearly #1



# Form Examples

## FY2008 Office Asset Assessment Form

Facility: DART Headquarters

Address: 1401 Pacific Avenue Date: September 2008

Description:	Building Exterior Walls			
Location:	Dock Area – North Side			
Condition:	1__	2__	3__	4_X_
Comments:				
A small amount of damage is located on exterior above a dock door. Overall exterior walls are in fair to good condition.				

Description:	Exterior Building Facade			
Location:	Building Exterior			
Condition:	1__	2__	3__	4_X_
Comments:				
The exterior building façade appears to be in good condition.				

Description:	Expansion Joints			
Location:	Dock–North Side Exterior of Bldg.			
Condition:	1_X_	2__	3__	4__
Comments:				
Expansion Joints need to be repaired due to excessive wear.				

Description:	Drain Grates			
Location:	Dock–North Side Exterior of Bldg.			
Condition:	1__	2__	3_X_	4__
Comments:				
The drain grates need to be secured with anchors or screws to prevent theft.				

## FY2008 Office Asset Assessment Form

Facility: DART Headquarters

Address: 1401 Pacific Avenue Date: September 2008

Overall Condition Rating of Facility				
1__	2__	3__	4_X_	5__
Comments:				
This facility does have items which require attention due to age, availability of components, or both which need to be addressed.				

Condition 5: In Basically like new condition, with minor cosmetic damage or deterioration

Condition 4: In typically good working order requiring only routine maintenance

Condition 3: Has non-critical defect needing attention or is nearing end of life, requiring overhaul or replacement

Condition 2: Critical or safety related defect needing attention, requiring immediate repair

Condition 1: Non-functional, requiring major repair or replacement

# Form Examples

LRV Number: 194  
Year: 1998  
LTD Mileage: 480231

## Inspection Item

1.) Exterior Condition  
comments:

1 2 3 4 5

2.) Interior Condition  
comments:

1 2 3 4 5

3.) Door System Condition  
comments:

1 2 3 4 5

4.) Condition of Tires  
comments:

1 2 3 4 5

5.) HVAC System  
comments:

1 2 3 4 5

6.) Propulsion System  
comments:

1 2 3 4 5

7.) Friction Brake System Condition  
comments:

1 2 3 4 5

8.) Low Voltage Power System Condition  
comments:

1 2 3 4 5

9.) Coupler/Draft Gear Condition  
comments:

1 2 3 4 5

10.) Underfloor Control Boxes Condition  
comments:

1 2 3 4 5

11.) Cab Condition  
comments:

1 2 3 4 5

12.) Overall rating

If rated @ a 1 or 2, give reason for rating below  
1 2 3 4 5

DART LRV Inspections  
Inspection Date: 6-23-08  
Fleet #: 51  
Manufacturer: Kinkisheryo

## Physical Condition

NRV Number: 3529  
Year: 1997  
NRV Mileage: 48297

## Inspection Item

1.) Interior Condition  
comments:

2.) Exterior Condition  
comments:

3.) Engine Compartment Condition  
comments:

4.) Chassis/Understructure Condition  
comments:

5.) Overall rating

DART NRV Inspections  
Inspection Date: 8-20-2008  
Manufacturer: International

## Physical Condition

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

If rated @ a 1 or 2, give reason for rating below  
1 2 3 4 5

Condition 5: In Basically like new condition, with minor cosmetic damage or deterioration  
Condition 4: In typically good working order requiring only routine maintenance  
Condition 3: Has non-critical defect needing attention or is nearing end of life, requiring overhaul or replacement  
Condition 2: Critical or safety related defect, not suited for revenue service before repair  
Condition 1: Non-functional, requiring major repair or replacement

Inspected By:

54303 Date: 8-20-2008

# Statistical Analysis

## FY2008 Condition Assessment Bus Fleets

ACTIVE FLEET						
FLEET #	YEAR	MANUFACTURER	BUS #	2008	Number	Selected
23	1998	NOVA Transit 40'	4200-4252	51	0	0%
24	1998	NOVA Transit 40'	4300-4349	48	0	0%
26	1998	NOVA Transit 40'	4400-4454	55	0	0%
27	1998	NOVA Transit 40'	4500-4589	89	0	0%
28	1999	NOVA Transit 40'	4600-4742	143	10	7.0%
31	2000	NOVA Transit 40'	4800-4909	110	10	9.1%
30	2000	Champion<30' (7 yr.)	5200-5259	8	2	25.0%
34	2001	Champion<30' (7 yr.)	5400-5430	8	2	25.0%
32	2002	NOVA Transit 40'	5500-5543	44	31	70.5%
33	2002	NOVA Transit 40'	5600-5644	45	30	66.7%
35	2004	NABI Suburban 40'	5700-5779	80	45	56.3%
ACTIVE FLEET TOTAL				681	136	20.0%

RESERVE FLEET						
FLEET #	YEAR	MANUFACTURER	BUS #	2008	Number	Selected
30	2000	Champion<30' (7 yr.)	5200-5259	37	9	24.3%
34	2001	Champion<30' (7 yr.)	5400-5430	23	9	39.1%
RESERVE FLEET TOTAL				60	12	20%

FLEET TOTAL				741	148	20.0%
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## 2008 CONDITION ASSESSMENT SUMMARY BUSES

Inspections Completed: 147

3.4 Summary Rating (for all that were inspected) \*\*

(Refer to the individual inspection report for detail information)

Updated on: 6/26/08 1:39 PM

Sample ID	Bus No.	Year	Bus Mileage	Fleet No.	Manufacturer	Overall Bus Rating **	Comments
1	4648	1999	443,057	28	NOVA	3	Has cracked "A" pillar
2	4651	1999	439,931	28	NOVA	3	Has cracked "A" pillar
3	4655	1999	439,265	28	NOVA	3	Has cracked "A" pillar
4	4687	1999	438,574	28	NOVA	3	Has cracked "A" pillar
5	4717	1999	420,421	28	NOVA	3	Has cracked "A" pillar
6	4718	1999	400,424	28	NOVA	4	
7	4722	1999	430,761	28	NOVA	3	Has cracked "A" pillar
8	4724	1999	415,529	28	NOVA	3	Has cracked "A" pillar
9	4727	1999	410,282	28	NOVA	3	Has cracked "A" pillar
10	4731	1999	406,891	28	NOVA	3	Has cracked "A" pillar
11	4848	2000	409,643	31	NOVA	3	Has cracked "A" pillar
12	4851	2000	401,533	31	NOVA	3	Has cracked "A" pillar
13	4864	2000	395,351	31	NOVA	3	Has cracked "A" pillar
14	4868	2000	398,276	31	NOVA	3	Has cracked "A" pillar
15	4871	2000	386,242	31	NOVA	3	Has cracked "A" pillar
16	4874	2000	407,788	31	NOVA	4	
17	4875	2000	395,694	31	NOVA	3	Has cracked "A" pillar
18	4876	2000	410,002	31	NOVA	3	Has cracked "A" pillar
19	4883	2000	389,471	31	NOVA	4	
20	4893	2000	371,123	31	NOVA	3	Has cracked "A" pillar
21	5204	2000	49,742	30	Champion	3	
22	5207	2000	76,992	30	Champion	3	
23	5208	2000	74,015	30	Champion	4	
24	5209	2000	68,229	30	Champion	3	
25	5212	2000	80,425	30	Champion	3	
26	5218	2000	98,145	30	Champion	3	
27	5219	2000	92,362	30	Champion	3	
28	5223	2000	76,725	30	Champion	3	
29	5254	2000	87,208	30	Champion	3	
30	5258	2000	87,208	30	Champion	3	
31	5403	2001	159,523	34	Champion	4	
32	5404	2001	203,623	34	Champion	3	

Bus Assessment Summary.xls  
Buses

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Assessment Quantities 06-2008  
Bus Fleets

# Assessment Conclusions

## Overall

- Assets are generally in good to excellent condition
- Asset owners understand conditions of assets
- Long & short term maintenance programs appear effective
- Financial Plan reserves appear adequate to support assets to planned end-of-life



# Assessment Conclusions

## Exceptions

- Obsolescence of older light rail propulsion systems
- Bus fleet retirement delay & impact on overhaul program
- Administrative building escalators & chilled water system
- Bus washer effluent runoff at two facilities
- Roof condition at two facilities

# Results

- Projected 29% reduction in funds over 20 yrs
- Major plan amendments

Description	FY10 - 20 Year Total	FY11 - 20 Year Total
Sources of Funds	\$27,245,400,000	\$19,440,700,000
Operating Expenses	(\$11,090,100,000)	(\$10,831,500,000)
Capital & Non-Operating Expenses	(\$11,431,300,000)	*(\$ 4,178,800,000)
Debt Service Expenses	(\$5,609,700,000)	(\$ 4,407,100,000)
Net Available Cash	\$335,100,000	\$ 205,000,000

\* ~\$2.452B (58%) reserved for SGR activities

# Lessons Learned

- Commit to the assessment on regular interval
- Use consistent process & scoring system
- Document method of data capture, storage & analysis
- Train assessment evaluators
- Don't get mired in numbers. Step back and consider assets from an overall sub-group perspective.
- Analyze the data to determine trends
- Use the data to make informed financial plan decisions

# Lessons Learned

- Choose asset evaluation pool carefully
  - Utilize a higher level approach- the goal is to determine state of good repair and to help forecast capital requirements.
  - Resist urge to start with financial capital asset list- this presents an unmanageable population of assets for assessment.
  - Select assets and asset classes that can impact safety or service or have a significant impact on operating or capital expense.
  - Group assets into classes that have a reasonable similarity (i.e. vehicles, facilities, structures, etc.) and utilize evaluators knowledgeable about each class.
  - For asset classes with large populations, select a statistically significant pool of assets in each class for asset assessment.

